INDEX TO VOLUME XXIV.

NOTE.

1. For authors of papers and for the names of debaters upon them SMALL CAPS are used.

2. *Italic type* is used for the full titles of papers. Cross references to the subject of a paper which may not be its exact title are in Roman type, as are the titles under the caption of the author's name.

3. The Society is not responsible as a body for the statements of fact or opinion in its papers and discussions.

PAGE

ADAMS, CHAS. E., disc., the metric system..... 446
ALDEN, GEO. I., disc., gift proposition for paying workmen..... 275
ALLEN, CHAS. M., turbine flow recorder..... 983
Alternating current motors for variable speed, W. I. SLICHTER..... 1037
Alternators, fly-wheel capacity for engine driven..... 98
Annealing and tempering steel..... 349
Analysis of the commercial value of a water per horse-power per annum, A. F. NAGLE..... 286
Anglemeter, indicating..... 992
Apparatus for obtaining a continuous record of the position of an engine governor, and the speed of the engine which it is governing, JOS. C. RILEY..... 78
ARNOLD, W. S., disc., oil burner..... 332
AYRES, H. B., disc., graphical daily balance in manufacture, 1332; shop management..... 1472

BACON, J. L., some data on hoisting hooks..... 1126
BALL, F. H., disc., standard engine tests..... 798
BARNAY, JOHN M., forty-four-foot pit-lathe..... 243
BATES, C. A., disc., metric system..... 468
BATES, E. P., disc., separating oil from exhaust steam, 347; smoke consumption..... 322
Beams, deflection of..... 116
BEMENT, A., strains produced by the excessive tightening of nuts, 1137; disc., experiment boiler of the Ohio State University, 1235; smoke consumption..... 316
BENJAMIN, CHAS. H., bursting of emery wheels..... 963
BLOOD, JOHN BALCH, a rational train resistance formula, 945; disc., shop management, 1473; tests of a hydraulic elevator system..... 942
BOGLE, JOHN M., memorial notice of..... 1539
Boiler trials, experiment, of the Ohio State University..... 1193
Boiler plate, specifications for..... 921
Boilers, standard, for testing the efficiency of coal..... 1485
BOLTON, R. P., test of a hydraulic elevator system..... 933
BORDEN, THOMAS J., memorial notice of..... 1539

PAGE

Boyer, E. S., disc., gift proposition for paying workmen, 263; use of a surveying instrument 383
Boyer, F. H., disc., gift proposition for paying workmen 272
Bursting of Emery Wheels, C. H. Benjamin 963
Breckenridge, L. P., disc., standard boiler for test of comparative values of various coals 1485

Cadwell, Wm. D., memorial notice of 1540
Calder, John, disc., a graphical daily balance in manufacture, 1331; bursting of emery wheels, 972; drawing office equipment, 1272; fits and fitting, 1183 and 1190; the machine shop problem 1320
Carnegie gift to engineering, 870; gift to engineering, resolutions 852
Cary, A A., disc., experiment boiler of the Ohio State University, 1243, 1246; positive governor drives for Corliss engines, 1155; standard boiler for comparative tests of values of various coals, 1486; the hot well as an oil extractor, 1147; water and heat consumption of a compound engine 1286
Castings, steel specifications for 921
Cavanagh, Joseph, memorial notice of 1541
Centrifugal machines and their uses, B. Viola 216
Christiansen, A., memorial notice of 1542
Christie, James, disc., the metric system 499
Christie, W. W., disc., standard engine tests 795
Cole, F. J., disc., bursting of emery wheels 971
Colles, Geo. W., disc., alternating current motors for variable speed, 1042; rational solution of the problem of weights and measures, 202; the metric system 482
Colvin, F. H., disc., the metric system 496
Comparative oil test, W. F. Parish, Jr 976
Compound engine, water and heat consumption at various powers 1274
Conductivity, heat resistance, reciprocal of heat 278
Constitution, by-laws and rules, proposed, 889; index 897
Coon, J. S., disc., water and heat consumption of a compound engine 1285
Crary, Robt. Fulton, Robert Fulton memorial 1532
Crosby, W. W., disc., filing system for office use, 167; the metric system .. 537

Dale, S. S., disc., the metric system 549
Darling, Edward A., memorial notice of 1542
Data on hoisting hooks, J. L. Bacon 1126
Day, Charles, the machine shop problem, 1302; disc., a graphical daily balance in manufacture 1333
Deflection of beams by graphics, W. Trinks 116
Description of sixty-foot vertical boring and turning mill, John Riddell 1288
Drawing office equipment, John McGeorge 1254
DuBrul, F. F., disc., shop management 1457

Ekstrand, Chas., disc., separating oil from exhaust steam 341
Elastic resistance 325
Eldredge, A. H., positive governor drives for Corliss engines, 1151; the hot well as an oil extractor 1144
Electric lighting rules, report of national conference 885

PAGE
Electrical Code, national amendments to,..... 886
Elevator system, hydraulic, test of..... 933
EMERSON, HARRINGTON, disc., shop management..... 1462
Emery wheels, bursting of..... 963
EMMETT, W. L. R., disc., steam turbine from an operating standpoint.... 1034
Engine, compound, water and heat consumption at various powers..... 1274
Engine (gas), test of twelve horse-power..... 1095
Engine governor, recording apparatus..... 78
Engine governors, bibliography of experimental work on..... 96
Engine, internal, combustion, using kerosene and gasolene as fuel..... 1063
Engine, speed of, by recording apparatus..... 78
Engines, Corliss, governor drives for..... 1151
Engines, (gas) method of testing..... 1048
Engines (steam), discussion on preliminary forms of committee report.... 791
Engines (steam), report of committee on standard system of testing..... 713
ENNIS, W. D., disc., gift proposition for paying workmen..... 260
Entropy analysis of the Otto cycle, S. A. REEVE..... 171
Experiment boiler of the Ohio State University, with results of some trials, E. A. HITCHCOCK..... 1193

Filing system for office use, HENRY M. LANE..... 161
Finer screw threads, CHAS. T. PORTER..... 137
Fits and fitting, STANLEY H. MOORE..... 1158
Fly-wheel capacity for engine driven alternators, W. I. SLICHTER..... 98
Forgings, steel, specifications for..... 921
Forty-four-foot pit-lathe, J. M. BARNAY..... 243
FOWLER, GEO. L., disc., filing system for office use, 166; oil burners, 339; use of surveying instrument..... 382
FRITH, A. J., disc., standard engine tests..... 795
Fuel, kerosene and gasolene, for use in internal combustion engines..... 1063
FULTON, GEORGE R., memorial notice of..... 1544
FULTON, ROBERT, memorial..... 1493

GABRIEL, C. R., disc., the metric system..... 617
GANTT, H. L., a graphical daily balance in manufacture, 1322; disc., gift proposition for paying workmen, 267, 273; the machine shop problem. 1320
GARRETT, WM., memorial notice of..... 1545
Gas-engines, (see engines—gas).....
GEIER, F. A., disc., the metric system..... 615
Gift proposition for paying workmen, FRANK RICHARDS..... 250
GIFFORD, R. L., disc., tests of a hydraulic elevator system..... 941
GOSS, W. F. M., disc., tests of twelve horse-power gas-engine..... 1125
Governor drives for Corliss engines..... 1151
Governor, engine, recording apparatus..... 78
Governors, engine, bibliography of experimental work on..... 96
GRAFSTROM, EDWARD, memorial notice of..... 1546
Graphical daily balance in manufacture, H. L. GANTT..... 1322

HAGUE, C. A., disc., standard engine tests..... 817
HALE, R. S., disc., experiment boiler of the Ohio State University, 1238; standard engine tests..... 805

PAGE

HALLADAY, H. F., and HODGE, G. O., performance of an internal combustion engine using kerosene and gasolene as fuel 1063
HALSEY, F. A., the metric system, 397; disc., a graphical daily balance in manufacture, 1332; gift proposition for paying workmen, 276; rational solution of the problem of weights and measures, 209–211; shop management 1465
HAND, S. A., disc., oil burners 340
HARKNESS, WILLIAM, memorial notice of 1546
HAWKINS, JOHN T., disc., shop management 1460–1474
Heat resistance, the reciprocal of heat conductivity, WM. KENT 278
HEISLER, C. L., disc., standard engine tests 833
HENNING, GUS. C., disc., data on hoisting hooks, 1133, 1135; elastic resistance, 329; finer screw threads, 141; indicating anglemeter, 998; smoke consumption, 323; specifications for boiler plate, rivet steel, steel castings and steel forgings, 928; strains produced by tightening of nuts, 1139; the metric system 469
HENSHAW, F. V., disc., forty-four-foot pit-lathe, 247; shop management .. 1476
HIBBARD, H. WADE, disc., rational train resistance formula, 957; standard engine tests 793
HILL, GEORGE, disc., tests of a hydraulic elevator system 940
HITCHCOCK, E. A., experiment boiler of the Ohio State University with results of some trials 1193
Hooks, hoisting, data on 1126
Horse-power per annum, analysis of commercial value of water-power per .. 286
Hot well as an oil extractor, A. H. ELDREDGE 1144
HUTTON, F. R., smoke consumption 315
Hydraulic elevator system, test of 933

Indicating anglemeter, CHAS. M. SARGENT 992
ISHERWOOD, B. F., Robert Fulton memorial 1515

JACOBUS, D. S., water and heat consumption of a compound engine at various powers 1274
JOHNSON, A. E., disc., data on hoisting hooks, 1134; fits and fitting, 1187; strains produced by tightening of nuts 1140
JONES, DAVID P., memorial notice of 1547
JONES, H. P., disc., tempering and annealing steel 349

KENNELLY, A. E., disc., the metric system 493
KENT, WM., heat resistance, the reciprocal of heat conductivity, 278; disc., experiment boiler of the Ohio State University, 1246; oil burners, 338; separating oil from exhaust steam, 348; shop management, 1476; standard engine tests, 803, 845; the machine shop problem 1320
KERR, C. V., disc., bursting of emery wheels, 972; steam turbine from an operating standpoint, 1034; the metric system, 625; water and heat consumption of a compound engine 1285
KINGSBURY, ALBERT, new oil testing machine and some of its results, 143; disc., elastic resistance, 328; oil burners 340
KLEIN, JOHN S., memorial notice of 1548
KRUESI, A., disc., centrifugal machines and their uses 242

PAGE

Labor, machine shop problem....1302–1322, 1337
Labor, gift proposition for paying workmen.... 250
LAFORGE, F. H., disc., separating oil from exhaust steam.... 348
LAMOITIER, PAUL, disc., the metric system.... 579
LANE, HENRY M., filing system for office use, 161; disc., shop management. 1475
LANZA, G., disc., rational train resistance formula, 955; standard engine tests 843
LEACH, GEORGE, memorial notice of.... 1549
Lathe, pit.... 243
LEWIS, WILFRED, disc., rational solution of the problem of weights and measures.... 209
LEWIS, D. J., disc., separating oil from exhaust steam.... 342
LIDGERWOOD, WM. F., memorial notice of.... 1549
LONGWELL, H. E., disc., fly-wheel capacity for engine driven alternators.... 110
LYTTLE, EUGENE W., disc., metric system.... 468

McBRIDE, JAMES, disc., rotary pumps.... 394
McGEORGE, JOHN, drawing office equipment, 1254; disc., a graphical daily balance in manufacture, 1333; experiment boiler of the Ohio State University, 1245; fits and fittings, 1185; strains produced by tightening of nuts.... 1139
McGUIRE, JOHN P., memorial notice of.... 1550
MACGILL, CHAS. F., disc., gift proposition for paying workmen.... 271
Machine shop practice, use of surveying instruments in.... 360
Machine shop problem, CHARLES DAY.... 1302
MANNING, C. H., disc., standard engine tests.... 807
MANSFIELD, A. K., disc., standard engine tests.... 807
MARKHAM, E. R., disc., tempering and annealing steel.... 351
MATTICE, A. M., disc., steam turbine from an operating standpoint.... 1031
MEIER, E. D., disc., gift proposition for paying workmen.... 273
MELVILLE, GEO. W., Robert Fulton memorial.... 1503
Memorial, Robert Fulton.... 1493
Memorial notices for members deceased during the year.... 1539
Method of testing gas-engines, E. C. OLIVER.... 1048
Metric system, F. A. HALSEY.... 397
Metric system, report of committee on arguments in favor of and against.. 630
Metric system, ballot.... 855
Mill, vertical boring and turning, description of.... 1288
MILLER, FRED J., disc., elastic resistance, 325; finer screw threads, 141; fits and fitting, 1186; forty-four-foot pit-lathe, 247; gift proposition for paying workmen, 275; strains produced by tightening of nuts, 1139; the metric system, 517; use of a surveying instrument.... 383
MONROE, W. S., disc., standard engine tests.... 837
MOORE, STANLEY H., fits and fitting.... 1158
MORISON, GEO. S., disc., the metric system, 622; memorial notice of.... 1550
MORSE, W. H., disc., standard engine tests.... 844
Motors, alternating current, for variable speed.... 1037

NAGLE, A. F., analysis of the "commercial" value of a water-power per horse-power per annum, 286; disc., standard engine tests.... 794
NEFF, E. H., disc., small spiral pinions in a milling machine.... 1481

PAGE

NIXON, J. O., memorial notice of..... 1551
NORRIS, H. M., disc., gift proposition for paying workmen..... 264
39
Oil burners, Booth..... 330
Oil, comparative test..... 976
Oil extractor, hot well as an..... 1144
Oil, separation from exhaust steam..... 341
Oil testing machine and some of its results, ALBERT KINGSBURY..... 143
Oil, types of apparatus for filtering feed-water from..... 342
OLIVER, E. C., method of testing gas-engines..... 1048
Otto cycle, entropy analysis of..... 171

PARISH, W. F., Jr., a comparative steel test..... 976
PARKER, J. H., disc., drawing office equipment..... 1271
PARSONS, H. DE B., disc., commercial value of water-power, 311; smoke consumption..... 324
PARTRIDGE, W. E., disc., filing system for office use..... 167
PECK, S. B., disc., a graphical daily balance in manufacture..... 1333
Performance of an internal combustion engine, using kerosene and gasolene as fuel, HALLADAY and HODGE..... 1063
Pinions, spiral, manufacture in milling machines..... 1481
PLATT, JOHN, disc., oil burners..... 339
POMEROY, L. R., disc., filing system for office use, 167; steam turbine from an operating standpoint..... 1031
PORTER, CHAS. T., finer screw threads..... 137
Positive governor drives for Corliss engines, A. H. ELDREDGE..... 1151
PRITCHETT, E. S., disc., the metric system..... 488
Proceedings of the New York (XLVIth) meeting..... 3
Proceedings of the Saratoga (XLVIIth) meeting..... 849
Pumps, rotary..... 385

Rational solution of the problem of weights and measures, S. A. REEVE..... 184
Rational train resistance formula, J. B. BLOOD..... 945
REEVE, SIDNEY A., entropy analysis of the Otto cycle, 171; rational solution of the problem of weights and measures, 184; disc., standard engine tests..... 843
Report (final), of the committee appointed to standardize a system of testing steam engines..... 713
Report of committee on standardizing engine tests, discussion on preliminary forms of..... 791
Report of the committee appointed to discuss the arguments in favor of and against the metric system..... 630
Report of the special committee on rules and methods..... 889
Report of special committee on revision of rules and methods..... 857
Report on meeting of national conference on standard electric lighting rules. 885
Resistance, train, rational formula..... 945
REYNOLDS, I. H., disc., drawing office equipment..... 1271
RICHARDS, FRANK, gift proposition for paying workmen..... 250
RICHARDS, F. H., disc., elastic resistance..... 328

PAGE
Richmond, H. A., disc., bursting of emery wheels 972
Riddell, John, description of sixty-foot vertical boring and turning mill, 1288; disc., fits and fitting 1173
Riggs, J. D., disc., rational solution of problem of weights and measures .. 201
Riley, Jos. C., apparatus for obtaining a continuous record of the position of an engine governor, and the speed of the engine which it is governing. 78
Robertson, C. H., test of a twelve horse-power gas-engine 1095
Rockwood, Geo. I., disc., commercial value of a water-power, 306; water and heat consumption of a compound engine 1283
Rogers, W. S., disc., gift proposition for paying workmen, 274; tempering and annealing steel, ... 357
Rotary pumps, John T. Wilkin 385

Sanguinetti, P. A., disc., flexible tubing, 1484; the metric system, 627; use of a surveying instrument 383
Sangster, Wm., disc., gift proposition for paying workmen 259
Sargent, Chas. E., an indicating anglemeter 992
Scheele, J. M. B., United States Army gun factory, Watervliet Arsenal .. 929
Scott, Irving M., memorial notice of 1551
Screw threads 137
Sederholm, E. T., disc., standard engine tests 840
Separating oil from exhaust steam 341
Sharpe, H. D., disc., the metric system 626
Shaw, George, memorial notice of 1552
Shop management, F. W. Taylor 1337
Shop management 1322–1302
Sixty-foot boring mill 1288
Slichter, Walter I., alternating current motors for variable speed, 1037; disc., fly-wheel capacity for engine driven alternators 98
Smart, R. A., disc., standard engine tests 844
Smith, Oberlin, disc., data on hoisting hooks, 1134; shop management, 1470; strains produced by tightening of nuts, 1138, 1140; tempering and annealing steel 354
Smoke, cause of 316
Smoke consumption 315
Smoke, prevention of 317
Southard, J. H., disc., the metric system 602
Spangler, H. W., disc., filing system for office use, 168; standard engine tests 811
Specifications for boiler plate, rivet steel, steel castings and steel forgings .. 921
Spiers, James, memorial notice of 1552
Stanwood, J. B., disc., standard engine tests 813
Steam engines (see engines—steam) .....
Steam, exhaust, separating oil from 341
Steam turbine from an operating standpoint, F. A. Waldron 999
Steel castings, specifications for 921
Steel, annealing and tempering 349
Steel forgings, specifications for 921
Steel, hardening, for tools 351
Steel, rivet, specifications for 921

PAGE
STIRLING, ALLAN, disc., experiment boiler of the Ohio State University... 1241
Strains produced by excessive tightening of nuts, A. BEMENT..... 1137
STRATTON, S. W., disc., the metric system..... 592
SUPLEE, H. H., disc., elastic resistance, 328; entropy analysis of the Otto cycle, 182; filing system for office use, 168; forty-four-foot pit-lathe, 247; oil burners, 340; gift proposition for paying workmen, 273; rational solution of the problem of weights and measures, 208; the metric system..... 625
Surveying instrument, use in machine shop practice..... 360
SWEENEY, J. M., disc., strains produced by tightening of nuts..... 1141

TAYLOR, FRED W., shop management, 1337; the machine shop problem.... 1320
Tempering and annealing steel..... 349
Test of a hydraulic elevator system, R. P. BOLTON..... 933
Test of a twelve-horse-power gas-engine, C. H. ROBERTSON..... 1095
THURSTON, ROBT. H., Robert Fulton memorial, 1518; disc., new oil testing machine and some of its results, 155; standard engine tests..... 791
TITTMAN, C. H., disc., metric system..... 469
Topical discussions and notes of experience.....315, 1481
TOWNE, H. R., disc., data on hoisting hooks, 1129; shop management, 1456; the metric system..... 616
Train resistance, rational formula for..... 945
Trials of experiment boiler of the Ohio State University..... 1193
TRINKS, WILLIBALD, deflection of beams by graphics..... 116
Tubing, flexible..... 1484
Turbine flow recorder, C. M. ALLEN..... 983
Turbine (steam), from an operating standpoint..... 999
TYLER, CHAS. C., use of a surveying instrument for machine shop practice. 360

United States Army gun factory, Watervliet Arsenal, J. M. B. SCHEELE..... 929
Use of a surveying instrument for machine shop practice, C. C. TYLER..... 360

Variable speed, alternating current motor for..... 1037
Vertical boring and turning mill..... 1288
VIOLA, BARTHOLOMEW, centrifugal machines and their uses..... 216

WALDRON, F. A., steam turbine from an operating standpoint, 999; disc., bursting of emery wheels, 973; data on hoisting hooks.....1131, 1135
Water and heat consumption of a compound engine at various powers, D. S. JACOBUS..... 1274
Water-power, analysis of commercial value of, per horse-power per annum. 286
Watervliet Arsenal, United States Army gun factory..... 929
WEBBER, SAM'L, disc., the metric system..... 495
WEBBER, W. O., disc., standard engine tests..... 804
WEEKS, GEORGE W., memorial notice of..... 1553
Weights and measures, rational solution of the problem of..... 184
WHEELER, F. Meriam, disc., separating oil from exhaust steam..... 342
WHEELOCK, JEROME, memorial notice of..... 1554

PAGE
WILCOX, W. J., disc., oil burners..... 330
WILKIN, JOHN T., rotary pumps..... 385
WILLISTON, A. L., disc., oil burners, 332; tempering and annealing steel.... 356
WINSHIP, JAS. G., disc., rotary pumps..... 395
WOODBURY, C. J. H., disc., the metric system..... 536

YARYAN, H. T., disc., separating oil from exhaust steam..... 341